

THE VANUATU SUBSPECIES OF *PAPILIO FUSCUS* GOEZE (LEPIDOPTERA: PAPILIONIDAE)

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Abstract

Both sexes of *Papilio fuscus nomus* Gabriel are illustrated for the first time. The distribution of *P. fuscus* Goeze in the islands of Vanuatu is discussed and brief biogeographical observations made regarding the New Hebrides archipelago.

Introduction

The butterflies of Vanuatu are not well documented. Following the Royal Society / Percy Sladen New Hebrides Expedition in 1971, a checklist of the butterflies was published (Gross 1975) which, in addition to reporting expedition findings, collated museum and other records from Vanuatu. Eight years later another list was independently prepared (Samson 1983), based largely on that author's personal observations on several islands. A number of other papers (Smart 1977, Samson 1982, 1984, Ackery *et al.* 1989, Lachlan 1993) have dealt specifically with the systematics of Vanuatu butterflies. This paper deals with the three described subspecies of *Papilio fuscus* Goeze, 1779 from Vanuatu and illustrates the most northerly (coincidentally also the most distinctive) subspecies for the first time.

Systematics

Aside from unconfirmed sightings of *Graphium sarpedon* (L.) from Espiritu Santo and Erromango (Gross 1975), *Papilio fuscus* is the only species of the family Papilionidae known from the islands of Vanuatu. Vanuatu *P. fuscus* populations were first described as *P. hypsicles* by Hewitson (1868), who noted the similarity of the new taxon to *P. canopus* Westwood, 1842 and *P. capaneus* Westwood, 1843. Only a general type locality for *P. hypsicles* was given by Hewitson (1868) (*i.e.* 'New Hebrides'), although it is clear from his illustration and from the specimens themselves, that this is the 'broad-banded' subspecies which occurs on the central islands of the New Hebrides archipelago, from Efaté northwards to the Banks group. Hancock (1985) suggested the type locality was the island of Espiritu Santo.

Gabriel (1936) described (but did not illustrate) four new forms of *Papilio* L. from the Indo-Pacific region, including a new subspecies of *P. fuscus*, *P. f. nomus* Gabriel, from a solitary male taken by Commander J.J. Walker R.N., on Loh Island, one of the Torres group of islands in northern Vanuatu, in September 1900. Primary type material of both *P. f. hypsicles* and *P. f. nomus* are in The Natural History Museum, London (BMNH). Samson (1982) described and illustrated *P. fuscus burgessi* Samson (as a subspecies of *P. canopus*) from the southern islands of Vanuatu and suggested the species was

unknown from the Banks and Torres Island groups of northern Vanuatu. The present locality of the primary type material of *P. f. burgessi* is not known. The male holotype and female allotype were, at the time of publication, in the 'National Butterfly Museum' (Samson 1982), also known as the Saruman Museum and now defunct. The contents of the Saruman Museum were auctioned by Sotheby's in 1983 and the primary types of *P. f. burgessi* comprised lot 884. The purchaser of this lot is not known. Paratypes of *P. f. burgessi* remain in the BMNH and the Bernice P Bishop Museum (BPBM), Honolulu.

Due possibly to the general nature of Gabriel's short paper, and the fact that no further specimens from the Torres Island group were subsequently reported, the presence of *P. f. nomus* in the Torres group has been almost completely overlooked (Gross 1975, Samson 1982, 1983, Hancock 1983a, 1985, D'Abbrera 1990 *etc.*). Following Gabriel's original description, the only published reference to *P. f. nomus* the author has been able to find is that of Hancock (1992), who included it (as *Princeps fuscus nomus*) in an annotated list of *P. fuscus* subspecies. Aside from the holotype, the only other specimen of *P. f. nomus* the author has seen in any collection is a second male in the Australian Museum in Sydney (AMS). This specimen bears a coded (numbered) label claiming it came from Tonga and is accompanied by a drawer label suggesting (almost certainly correctly) Vanuatu as a more probable source. No specimens of *P. f. nomus* exist in the Australian National Insect Collection (ANIC), Canberra (Ted Edwards, pers. comm.) or the BPBM (Al Samuelson, pers. comm.).

P. f. hypsicles and *P. f. burgessi* differ from each other primarily in the width of the pale median band, especially on the forewing. In the latter populations this band is narrower and one might expect specimens from north of the range of the former (*i.e.* from Torres), to have a broader band than *P. f. hypsicles*. In fact, the forewing band of *P. f. nomus* is significantly reduced, to a degree where it may be vestigial. This subspecies also lacks the hindwing submarginal series of red spots found in the other two subspecies. A series collected by the present author in August 2000 on Loh Island, the type locality of *P. f. nomus*, confirmed described subspecific characteristics of the holotype. Distribution of Vanuatu *P. fuscus* subspecies is shown in Fig. 1. Both sexes of *P. f. nomus* (Fig. 2) and *P. f. hypsicles* (Fig. 3) are illustrated, together with two male specimens of *P. f. burgessi* (Fig. 4). A female of the last taxon was not available.

Discussion

Hancock (1992) recognised 34 subspecies of *Papilio fuscus*, occurring from Sulawesi in the west to Vanuatu in the east. To these may be added a further two subspecies from the Solomons archipelago, *P. f. relmae* Tennent from New Georgia and *P. f. gyrei* Tennent from Malaita (Tennent 1999).

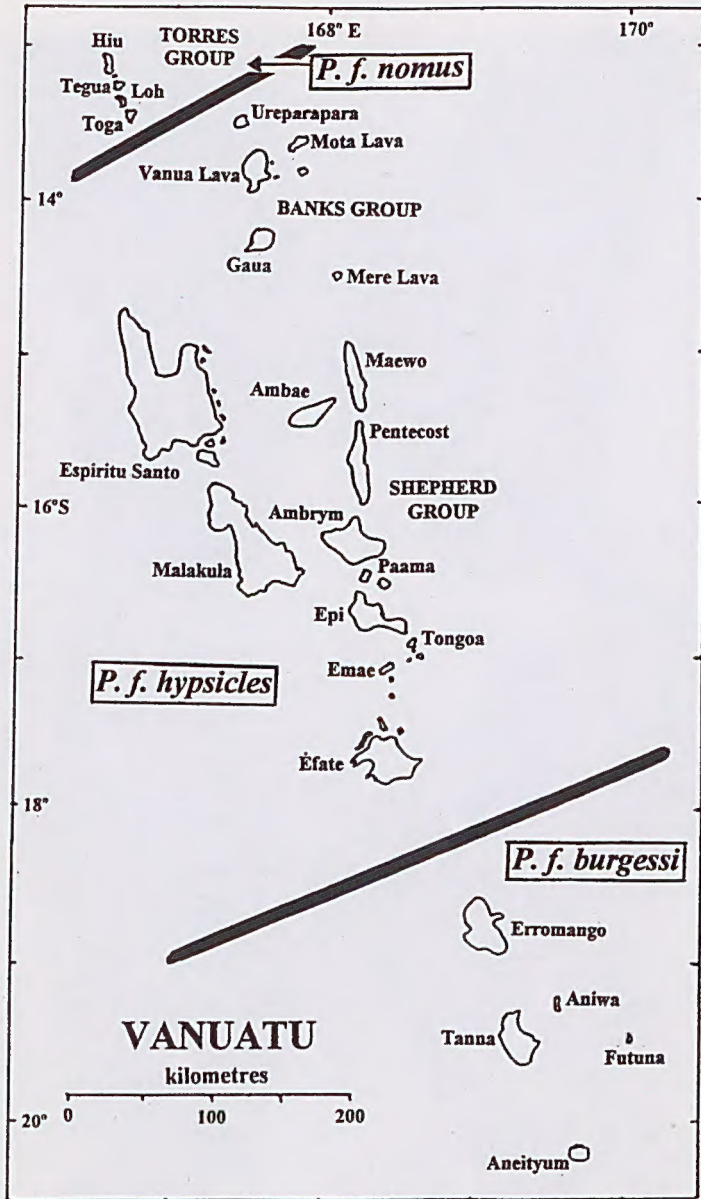


Fig. 1. Distribution of Vanuatu subspecies of *Papilio fuscus*.

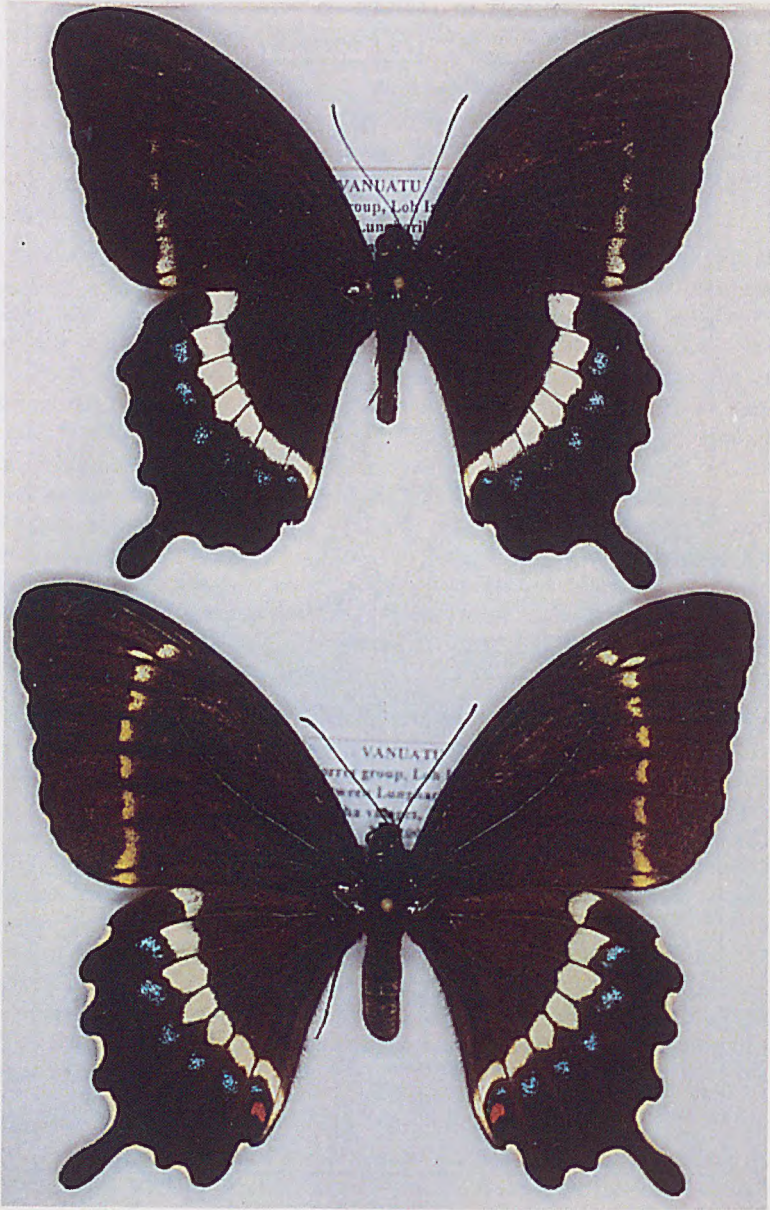


Fig. 2. *Papilio fuscus nomus*, male and female (Loh Island, Torres group).

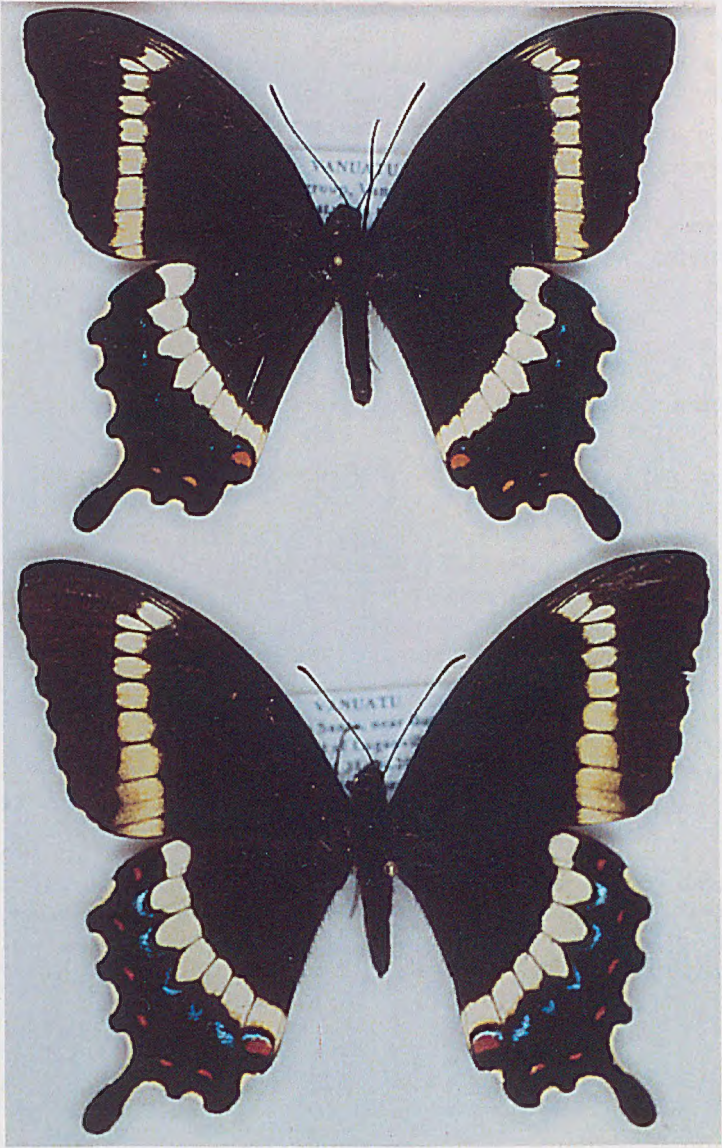


Fig. 3. *Papilio fuscus hypsicles*, male (Vanua Lava, Banks group) and female (Espiritu Santo).

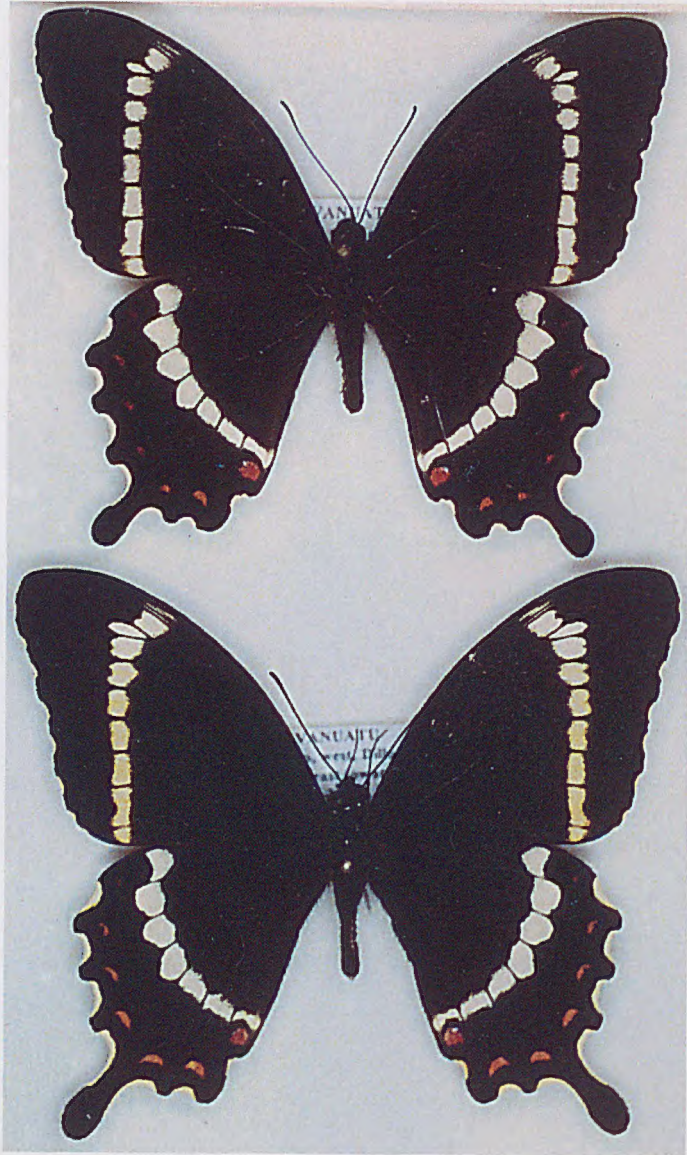


Fig. 4. *Papilio fuscus burgessi*, males (Erromango).

Vanuatu populations mark the most easterly extension of the range of the species and it is considered likely that *P. fuscus* arrived (probably from Australia, but possibly from San Cristobal) first on one of the central islands of Vanuatu, before spreading south (where *P. f. burgessi*, with a less broad median band evolved) and north to the Torres Islands (where *P. f. nomus*, with a greatly reduced median band evolved).

Biogeographically, there appears to be a line of discontinuity between the islands of Efaté and Erromango and this has been remarked upon previously with regard to the butterflies (Samson 1983, Ackery *et al.* 1989). Cheeseman (1957) suggested that the main islands south of this line (*i.e.* Erromango, Tanna, Aneityum) might have once been part of a single land mass. Recent fieldwork by the author suggests further discontinuity between the Torres Islands and the Banks group to the south east, and between the Torres group and the Santa Cruz group to the north, leaving the Torres in effect a discrete island group, with a significant proportion of taxa quite different from its immediate neighbours. This is currently under investigation.

The Torres group represents the most northerly extension of the 'natural' spread of the genus *Papilio* in the New Hebrides archipelago, which is taken to include the Santa Cruz Islands, politically part of the Solomon Islands. Samson (1979) described *P. bridgei hollinsi* Samson from Nendo, the main island of the Santa Cruz group, but this was synonymised with *P. erskinei* Mathew, 1886 by Hancock (1983b). Tennent (1999) presented evidence to suggest that the specimen on which the description of *P. b. hollinsi* was based was wrongly labelled and was almost certainly from San Cristobal, the most easterly island of the Solomons archipelago. The only *Papilio* species known to occur in the Santa Cruz Islands is *Papilio aegeus* Donovan, 1885, thought to have been accidentally introduced to the islands from Australia (Waterhouse 1932, Hancock 1983b, Tennent 1999).

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